



US EPA RECORDS CENTER REGION 5



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ENVIRONMENT

Subject:

Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Willow Boulevard/A-Site Landfill Operable Unit 2 Preliminary Design Report -
Addendum 1 – Responses to USEPA/MDNRE Draft Comments

Date:

October 13, 2010

Dear Mr. Berkoff:

Contact:

Pat McGuire

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pat.mcguire@arcadis-us.com

Our ref:

B0064581.0000.00030/
B0064582.0000.00030

This letter supersedes the letter Addendum that was submitted to you by email on October 12, 2010 and incorporates a change that you requested on October 13, 2010.

On behalf of Georgia-Pacific LLC (Georgia-Pacific), this letter documents a set of responses to three of the draft comments provided by the U.S. Environmental Protection Agency (USEPA) and Michigan Department of Natural Resources and Environment (MDNRE) on the *Willow Boulevard/A-Site Landfill Operable Unit 2 Preliminary Design Report (WB/A-Site OU Preliminary Design Report)* and draft Construction Drawings. Comments were provided to Georgia-Pacific and ARCADIS on August 4, 2010 (USEPA) and August 17, 2010 (MDNRE). The three responses to comments outlined below represent issues that have the potential to substantially change the design from that currently presented in the WB/A-Site OU Preliminary Design Report. ARCADIS understands that following review of this letter, USEPA intends to provide formal comment on the WB/A-Site OU Preliminary Design Report.

As requested by USEPA, these responses are to be considered as Addendum 1 to the July 2010 Preliminary Design Report.

USEPA/CH2MHILL Specific Comment 3:

"All material excavated....from the Willow Boulevard Drainageway will be...consolidated at the Willow Boulevard Landfill". Section 1.4 of the ROD states that this material will be relocated to the A-Site Landfill. Please explain the discrepancy.

Response

The disposal criteria set out in the ROD were based on the results of the Focused Feasibility Study (FFS) for the OU, which was finalized in 2004. The FFS assumed a total removal volume of approximately 14,000 cy, with approximately 6,000 cy coming from Willow Boulevard Landfill. After the Consent Decree was finalized and the Preliminary Design completed, the total removal volume was revised, and is now estimated at 100,000 cy, with approximately 13,000 cy from the Willow Boulevard Landfill. The increased volume makes disposal in both landfills a much more practical option.

The current design includes the consolidation of approximately 87,000 cy of materials in the A-Site Landfill and 13,000 cy in the Willow Boulevard Landfill, increasing the height at both locations by approximately 6.5-feet (the increase includes a cover thickness of 3.5 feet [incorporating a 6-inch vegetative soil layer, 24-inch soil drainage and protection layer, a geosynthetic drainage composite, flexible membrane, and a 12-inch sand gas venting layer] and grading required to comply with relevant regulations). The resulting peak elevations would be 803.3 feet and 781.5 feet, at A-Site and Willow Boulevard, respectively. If all 100,000 cy of excavated material – including the 13,000 cy from Willow Boulevard – were consolidated at the A-Site Landfill, there may be no increase in the peak elevation as there are areas within the footprint of the landfill that could be filled in (particularly on the western side of the landfill); however, the height at Willow Boulevard Landfill would still increase by approximately 4.5 feet to accommodate the final cover system and create the grades required for stormwater management.

Three other project elements related to consolidation location that do not appear to be fully considered in the FFS and ROD are worker safety, potential adverse environmental impacts, and the construction schedule. Currently, the construction schedule is based on conducting remedial actions at the Willow Boulevard Site during the first construction season and A-Site in the second. Closing the Willow Boulevard Landfill first has been identified to be the safest and most cost-effective approach to cleanup activities in that part of the OU. If it became necessary to transport material excavated from Willow Boulevard over to A-Site, the limited access between the two areas (i.e., the one-lane bridge over Olmstead Creek) could present issues associated with worker safety. Approximately 650 round trip truck loads would be required to transport 13,000 cy (using a 20 cy capacity dump truck) from Willow Boulevard to A-Site. Maintaining two-way traffic in areas where there might be limited site distances and rough terrain would increase the potential for vehicle accidents,

increasing the potential for injuries to site workers. These risks are manageable, but would be in addition to potential risks associated with disposal approach described in the Preliminary Design Report.

Disposing materials at Willow Boulevard will reduce the amount of time both disposal areas are open to the weather and thereby reduce adverse environmental impacts of the remedial action relative to the alternative. Having both landfills open for longer than necessary essentially doubles the stormwater management issues and increases the potential for leachate generation due to contact between stormwater and residuals. The potential for air transport of dust and PCBs from the additional truck traffic would also increase.

Given potential weather conditions and traffic congestion at the Olmstead Creek bridge (only one truck would be able to pass over the bridge at a time), it may take upwards of 30 minutes to safely complete one round trip. This could potentially add over 300 hours (five to six weeks) to the construction schedule, which may hinder the ability to complete the closure of Willow Boulevard in one construction season.

In addition, placing the Willow Drainageway material in A-Site may also require additional temporary cover material to be imported to stabilize the material over the winter of 2011-2012. This temporary cover material may not be able to be recovered and may result in additional fill volume in A-site.

As requested by USEPA, ARCADIS has performed a preliminary evaluation of alternative options for consolidation of residuals at the OU. The attached Table 1 presents the approach included in the Preliminary Design report and three alternative options, as described below. During discussions with USEPA on the excavation and consolidation aspects of the design and the scope of these new options, USEPA stated that there is a clear desire on the part of the public to see a reduction in the "footprint" or area over which residuals are present at the two landfills. The range of options presented here all result in a decrease in the footprint of residuals at both Willow Boulevard and A-Site. This evaluation has been performed solely for discussion purposes based on a conceptual evaluation of the options described below. If one of the three alternative options were selected in place of the current approach, more detailed design work and analyses would be necessary.

1. **Consolidation of excavated material at Willow Boulevard and A-Site**
(Current Design): This option presents the areas and peak elevation of the design presented in the Preliminary Design Report.

2. **Consolidation of all excavated material at A-Site:** This option assumes that all soils excavated as part of remedial activities from areas within and adjacent to the both landfills would be consolidated at the A-Site Landfill only. This option would reduce fill volumes at the Willow Boulevard landfill and therefore, reduce its peak elevation (as compared to Option 1). Excavated soils could be consolidated at the A-Site landfill in a configuration similar to the current design, however, the majority of the A-Site Landfill side slopes would be increased to the 25% maximum condition with the exception of the peak landfill elevation area (i.e. the area of the landfill designed to have 4% slopes), which would likely remain unchanged from the current design. The extent of the final cover limits would remain consistent with the current design.

3. **Consolidation of excavated material at Willow Boulevard and A-Site with existing sheetpile wall remaining in place:** This option assumes that the approximately 45,000 cy of soil material that would be regraded at A-Site as a result of removing the sheetpile wall, would instead, remain in place. The excavated material would be reduced to 55,000 cy (from the current design of 100,000 cy), and the materials would be placed at the A-Site and Willow Boulevard landfills in a configuration similar to the current design, however the peak elevation of the A-Site Landfill could potentially be lowered (as compared to Option 1). The extent of the final cover limits would remain consistent with the current design.

4. **Consolidation of all excavated material at A-Site with existing sheetpile wall remaining in place:** This option assumes that the approximately 45,000 cy that would be regraded at A-Site as a result of removing the sheetpile wall, would instead, remain in place. Excavated material (a total of 55,000 cy) would be placed only at the A-Site Landfill, however, the majority of the A-Site Landfill side slopes would increased to the 25% maximum condition with the exception of the top area (with 4% slope) of the landfill, which would likely remain unchanged from the current design. The extent of the final cover limits would remain as consistent with the current design.

Regardless of where material is consolidated following excavation, the change in footprint (i.e., the decrease in area from the current extent of residuals to the proposed extent of the final cover system) at both Willow Boulevard and A-Site is consistent across all the alternative options presented above. The primary difference among the alternatives is in the peak heights of the landfills. In each option where the sheetpile wall is removed, the peak height at A-Site is 22-24 feet higher than that of

Willow Boulevard. For the alternatives in which the sheetpile wall is left in place, the difference in peak heights of the landfills is 12-14 feet.

MDNRE Comment 1:

As identified in Section 1 Excavation of the 2009 Consent Decree Statement of Work (SOW), the "Settling Defendant shall excavate the Willow Boulevard Drainageway, the Area South of the A-Site Berm, the Area East of Davis Creek, and the former Olmstead Creek Area to the remedial action goal of 0.33 ppm PCB. The areas to be so excavated are delineated on Figure 2 of the ROD. The Settling Defendants shall excavate these four areas to the 0.33 ppm PCB cleanup goal;..." Based on Figures 2-1, 2-3, 2-4, and 4-1, select portions of the Willow Boulevard Drainageway, the Area South of the A-Site Berm, and former Olmstead Creek Area has been designated as wetlands and will be excavated to the 0.33 ppm cleanup goal and any other portions will be excavated to meet a 6.5 ppm PCB cleanup goal. As indicated above, the Settling Defendants have agreed to excavate the entire Willow Boulevard Drainageway, the Area South of the A-Site Berm, the Area East of Davis Creek, and the former Olmstead Creek Area to the remedial action goal of 0.33 ppm PCB. The Preliminary Design Report and Construction Drawings do not reflect this agreement of the Consent Decree.

Response:

The application of the 0.33 mg/kg criterion was discussed in a teleconference held with USEPA and MDNRE on August 25, 2010. ARCADIS and Georgia-Pacific agreed that all areas within the Willow Boulevard Drainageway (in addition to the Area South of the A-Site Berm, the Area East of Davis Creek, and the former Olmstead Creek Area) that are not managed by capping would be excavated to a cleanup criterion of 0.33 mg/kg. The agreement to apply this number to a larger area than described in the Preliminary Design Report does not constitute Georgia-Pacific's concurrence with USEPA or MDNRE that it is appropriate to apply a sediment criterion to upland soils for any reason, nor does it signify concurrence with USEPA or MDNRE concerning the application of this criterion to soils. Georgia-Pacific does not believe the application of the 0.33 mg/kg sediment criterion to soils is technically valid.

The attached figure (Figure 1) shows the updated proposed excavation areas and limits of the cap within the Willow Boulevard Drainageway, assuming excavation to a 0.33 mg/kg criterion. The revised extent of excavation includes one additional area

around sample location WB09-09 that was previously excluded based on application of the 6.5 mg/kg criterion, as the maximum PCB concentration in this sample is 0.59 mg/kg. The extent of excavation may also be revised as applicable in the Pre-Final Design Report.

As requested, Section 3.1.1.1 has been revised to reflect the above as follows:

As described in the Remedial Design Work Plan for the OU (RD Work Plan; ARCADIS 2010a), soil remediation is anticipated to occur primarily on property owned by Georgia-Pacific that is zoned for light industrial use – as a result, the Part 201 Generic Residential Land Use Criterion of 4 mg/kg for PCBs in soil is not a basis of design for the remedial action. The PCB criterion that is the basis of design for the Willow Boulevard Drainageway, the area south of the A-Site berm, and the area east of Davis Creek is the sediment cleanup criterion of 0.33 mg/kg, as stated in the ROD. For the area near monitoring well AMW-3A, the basis of design is 6.5 mg/kg PCB, which is the lower end of the No Observed Adverse Effect Level range identified above.

Considering the 0.33 mg/kg criterion may be difficult to achieve, it is the understanding of Georgia-Pacific and ARCADIS that if USEPA determines that the 0.33 mg/kg PCB remediation goal has not been achieved in a particular area, USEPA will consult with MDNRE and Georgia-Pacific regarding (1) whether additional remedial actions will be effective in achieving the 0.33 mg/kg remediation goal in the area; and (2) the potential nature of such additional remedial actions. Additional remedial actions to be considered include, but are not limited to: (1) additional excavation; (2) backfilling with clean material; (3) capping; and (4) monitored natural attenuation. In determining whether and how to proceed with additional remedial activities, USEPA will consider the extent and concentration of the remaining PCBs in the area(s).

MDNRE Comment 2:

As identified in Section 1.1 Setback from Kalamazoo River at the Willow Boulevard Landfill of the SOW, "The excavation along the northern banks of the Willow Boulevard Landfill (along the Kalamazoo River) shall be of sufficient distance to create an adequate buffer zone, which ensures that, for the lifetime of the remedy, there is no direct contact between the contaminated residuals within the landfill and the Kalamazoo River. This

buffer will also be adequate to prevent PCBs from migrating (by surface water runoff or erosion) from the landfill into the Kalamazoo River. The excavated areas shall be backfilled with clean soil with sufficient organic content to support restoration planting materials and to create an ecologically friendly bank. Additionally, this buffer zone or setback shall be of sufficient size to allow for the installation of and access to groundwater monitoring wells." The preliminary design presented in the Preliminary Design Report and Construction Drawings do not meet this requirement of the SOW.

Response:

To prepare the northern and western slopes of Willow Boulevard for the proposed cover system, it will be necessary to excavate a minimum of 14 feet horizontally back from the edge of the Kalamazoo River (to get down below the base of existing paper-making residuals). In doing so, approximately 6,500 cy of material – including, to a practical extent, all residuals in this 14-foot buffer zone – will be removed from around the northern perimeter of the Willow Boulevard Landfill adjacent to the Kalamazoo River. This excavation will allow for the 3.5-foot thick cover system to be laid at a slope of 25% along the perimeter and the placement of approximately 6,000 cy of clean fill. The proposed final slopes of the northern and western perimeter of the Willow Boulevard Landfill will be able to accommodate equipment to install and access the necessary groundwater monitoring wells – the ability to successfully work on slopes of 25% was proven during the pre-design investigation boring installation along the northern berm. This is described in more detail below.

The buffer zone created by excavation to the required slopes will create a zone approximately 14 feet wide along the river that will be free of residuals. The cover system, which will be constructed over the regraded slope as well as the materials excavated and consolidated in the center of the landfill, will include 12 inches of sand, an impermeable membrane, geosynthetic drainage composite, 24 inches of soil and stone, and a 6-inch vegetative soil layer. The cover system will provide an impermeable barrier between the Willow Boulevard Landfill and the Kalamazoo River, and is designed to achieve the objectives of ensuring "no direct contact between the contaminated residuals in the landfill and the Kalamazoo River" and preventing erosion and run-off of PCB-containing paper-making residuals into the river, as described in the ROD and SOW.

To address the collection of representative groundwater samples from the wells installed along the northern and western perimeter of Willow Boulevard, the use of double-cased wells is proposed. Double-cased groundwater monitoring wells will be

installed in a manner similar to that used for other wells (i.e., WMW-3A) installed through paper-making residuals at the Willow Boulevard Landfill during the Remedial Investigation (RI). No PCBs were detected in two rounds of groundwater samples collected from WMW-3A during the RI in 1996 and 2000, proving the double-case technology can accommodate installation of monitoring wells through paper-making residuals. USEPA stated a concern that installation of monitoring wells through paper-making residuals may compromise the interpretation of groundwater sample results; however, no specific rationale was explained. ARCADIS believes the available data for the OU specifically and the Site in general provide proof of the reliability of this approach – double-cased wells have been installed and monitored successfully at numerous locations at the landfill OUs of the Superfund Site. Further, if there were a detection of PCBs at a double-cased well believed to be associated with the temporal impacts of well construction, this result could be differentiated by completing a trend analysis of the data.

During the teleconference with USEPA and MDNRE on August 25, 2010, USEPA expressed concern that the proposed approach for construction of the buffer zone was not consistent with the ROD, and that it would not allow installation of reliable monitoring wells. ARCADIS asserts that the construction approach as described above is consistent with the ROD. The ROD does not require a particular size, shape, or configuration of the buffer zone. Nor does it state that the monitoring wells cannot pass through residuals, rather the ROD only requires that the buffer be sufficient to allow installation of the wells and future access to the wells. The configuration as proposed in the Preliminary Design Report provides an adequate buffer zone to satisfy the requirements of the ROD. A cross section showing residuals excavation and proposed location of groundwater monitoring well is provided in Figure 2 and Figure 3 shows, in plan view, the monitoring well locations.

ARCADIS has evaluated several alternative approaches to address the agency's concerns about installing the four (4) proposed groundwater wells through paper-making residuals. These alternatives include the following:

- Localized excavation and clean backfill only around the proposed groundwater monitoring wells, with the cover system being retained along the full slope. In this option, the monitoring wells would be moved downslope and trench boxes would be used during excavation to minimize the additional excavation volumes. It is estimated that an additional 100 to 200 cy of material would need to be removed (6,500 cy would still be pulled back along the entire slope per the Preliminary Design to allow for placement of the cover system). A conceptual cross section

for this option is provided in Figure 4 and Figure 5 shows a plan view of the monitoring well locations and extent of excavation. This option has several drawbacks. First, established groundwater flow pathways may be changed. Preferential pathways to groundwater may result from backfilling the excavations with a material having a higher hydraulic conductivity property than paper-making residuals. Care would therefore need to be taken to choose a suitable backfill material to minimize this issue. Another issue is the complications associated with excavation below the water table. With the groundwater monitoring wells spaced as illustrated in the Preliminary Design Report, there is the potential that a portion of the excavated material may be taken from below the median river water level to reach the estimated bottom of residuals. It is well established that excavating below the water table causes mixing between materials targeted for removal and native materials. This creates uncertainty as to the nature and extent of residuals after excavation, and may unintentionally expand the affected area. Additional problems arise with the management of river water, stormwater, and/or leachate that could collect in the open excavation. The management of water collected in the open excavation may further mix/disturb the base of the excavation and potentially impact the clean soils installed during backfilling operations.

- Excavation back from the shoreline by varying distances along the perimeter of the Willow Boulevard Landfill, and backfilling to achieve a 3:1 slope to the top of berm (in this option the cover system would continue down the backslope of the excavated residuals at a slope of 25% to the bottom of excavation). As with the previous option, the groundwater monitoring wells would be moved downslope to minimize excavation. A conceptual cross section for this option is provided in Figure 6 and Figure 7 shows a plan view of the monitoring well locations and extent of excavation. It is estimated that this option would result in the excavation of an additional 12,100 cy of material (in addition to the 6,500 cy already accounted for in the Preliminary Design), which may have schedule implications for the project. Similar to the localized excavation option, the existing groundwater flow paths may be altered, excavation may need to be performed down below the water table (thus raising issues of mixing between impacted and non-impacted materials), and there would be an increased need to manage and control river water, stormwater, and/or leachate.

In contrast to the situation at A-Site, where berms were constructed for the dewatering lagoons thus establishing a 'clean' buffer before the placement of paper-making residuals was initiated, Willow Boulevard Site was created by placing paper-

ARCADIS

Mr. Berkoff
October 13, 2010

making residuals within a backwater area of the Kalamazoo River. Over time, the paper-making residuals (not all of which contain measureable levels of PCBs) have become stable, and based on the results of the Remedial Investigation, we have an understanding of the nature and extent of PCB impacts. To disrupt this setting alters our understanding of the nature and extent of PCB-impacted materials, creates unnecessary uncertainties, and potentially could expand the extent of PCB into areas that are not currently affected.

Although both of the above options may be viable to incorporate into the design, Georgia-Pacific and ARCADIS assert that the current conditions at Willow Boulevard Site are stable and should not be disturbed. The installation of monitoring wells into unknown subsurface conditions has a greater potential to compromise the interpretation of groundwater data than the installation of double-cased monitoring wells through delineated residuals. Furthermore, ARCADIS believes that it is more reliable to monitor beneath the established interface between waste and native materials as proposed in the *Preliminary Design Report*.

Georgia-Pacific and ARCADIS believe the current design meets the intent of the setback as described in the ROD and SOW, which is to: 1) isolate the paper-making residuals from the River, 2) prevent erosion and run-off of PCB-containing materials, and 3) provide for the installation and access of monitoring wells. The current design adequately meets these requirements.

We believe this Addendum fully addresses USEPA's primary comments on the Preliminary Design Report. Please let us know if you have additional questions or would like to discuss any of the elements of this Addendum further.

Sincerely,

ARCADIS



Pat McGuire
Project Coordinator

ARCADIS

Mr. Berkoff
October 13, 2010

Enclosures:

- Table 1 *Alternative Options for Consolidation of Material at the Willow Boulevard and A-Site Landfills in Response to USEPA/CH2M HILL and MDNRE Comments on the Preliminary Design Report, July 2010*
- Figure 1 *Perimeter Excavation Plan and Extent of Cover System*
- Figure 2 *Berm Section – Preliminary Design*
- Figure 3 *Plan View Preliminary Design*
- Figure 4 *Berm Section –Option 1*
- Figure 5 *Plan View Option 1 – Localized Excavation around Monitoring Wells*
- Figure 6 *Berm Section –Option 2*
- Figure 7 *Plan View Option 2 – Full Bank Setback*

Copies:

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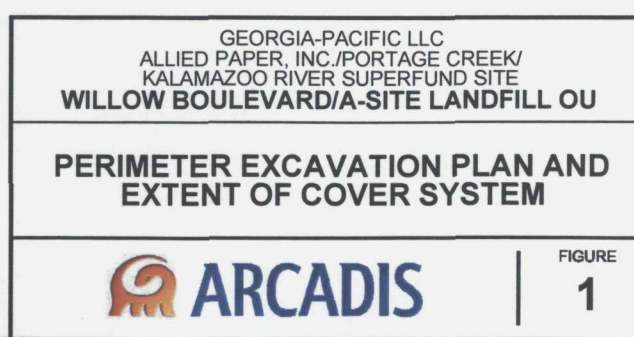
Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Willow Boulevard/A-Site Landfill Operable Unit 2

**Table 1- Alternative Options for Consolidation of Material at the Willow Boulevard and A-Site Landfills in Response to
USEPA/CH2M HILL and MDNRE Comments on the Preliminary Design Report, July 2010**

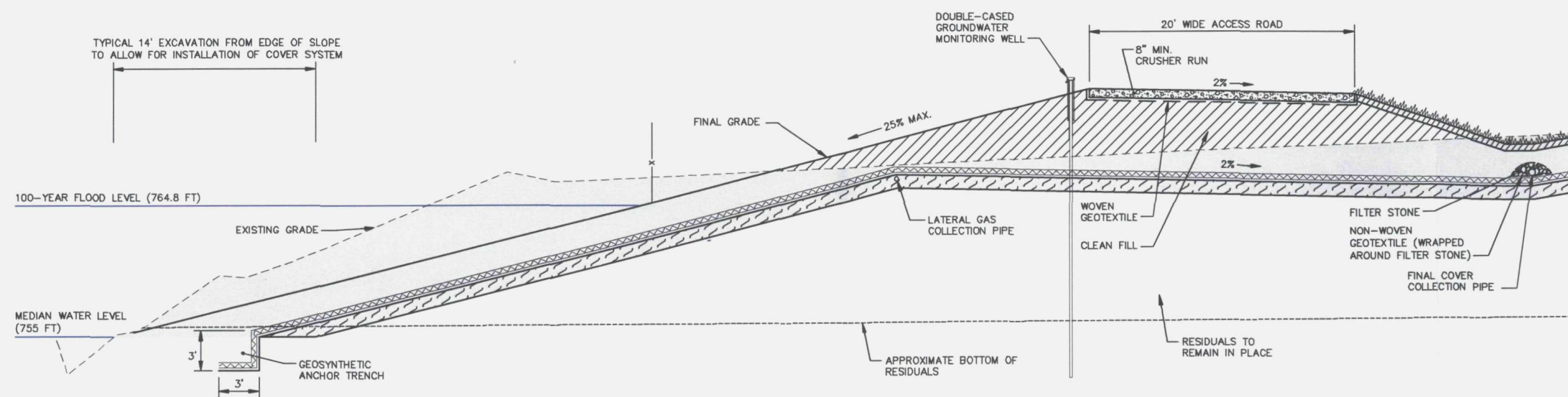
Alternative	Willow Boulevard Landfill					A-Site Landfill				
	Acreage of Final Cover System at Willow Boulevard Landfill ¹	Reduction (acres) / % Change in Extent of Residuals at Willow Boulevard Landfill ¹	Estimated Peak Elevation of Willow Boulevard Landfill ²	% of Material Targeted for Excavation in Preliminary Design Consolidated at Willow Boulevard Landfill ³	% Change in Volume of Willow Boulevard Landfill ⁴	Acreage of Final Cover System at A-Site Landfill ⁵	Reduction (acres) / % Change in Extent of Residuals at A-Site Landfill ¹	Estimated Peak Elevation of A-Site Landfill ²	% of Material Targeted for Excavation in Preliminary Design Consolidated at A-Site Landfill ³	% Change in Volume of A-Site Landfill ⁴
1. Consolidation of material at Willow Boulevard and A-Site (Current Design)	9.4	-1.6 / -15%	781.5	13%	+9%	16.9	-5.1 / -23%	803.3	87%	+18%
2. Consolidation of all material at A-Site	9.4	-1.6 / -15%	779.5	0%	0%	16.9	-5.1 / -23%	803.3	100%	+21%
3. Consolidation of material at Willow Boulevard and A-Site; leave sheetpile wall in place	9.4	-1.6 / -15%	781.5	13%	+9%	16.9	-5.1 / -23%	793.3	42%	+9%
4. Consolidation of all material at A-Site; leave sheetpile wall in place	9.4	-1.6 / -15%	779.5	0%	0%	16.9	-5.1 / -23%	793.3	55%	+12%

Notes:

1. Current extent of residuals at Willow Boulevard is approximately 11 acres (including the Willow Boulevard Drainageway). Current extent of residuals at A-Site is approximately 22 acres (including the area south of A-Site berm, area east of Davis Creek, and area near monitoring well AMW-3A).
2. Estimated peak landfill elevation includes final cover system thickness of approximately 3.5 feet (incorporating a 6-inch vegetative soil layer, 24-inch soil drainage and protection layer, a geosynthetic drainage composite, flexible membrane, and a 12-inch sand gas venting layer).
3. The current Preliminary Design assumes that 13,000 cy of material would be excavated from Willow Boulevard and 87,000 cy would be excavated from A-Site. 45,000 cy of the material excavated from A-Site is estimated to be in conjunction with removal of the sheetpile wall. The percentage indicated is of the original total excavated volume of 100,000 cy.
4. The total existing volume of PCB-containing material in the Willow Boulevard Landfill is estimated as 152,100 cy in the 2004 Remedial Investigation/Focused Feasibility Study and the total volume in the A-Site Landfill is estimated as 475,400 cy. The percentage change presented is the volume additional to the estimated existing volumes of each of the Landfills.
5. The final cover area for A-Site does not vary in any of the alternatives presented in this assessment -- it is consistent with the current design, in which the final cover system is terminated within the perimeter berm adjacent to the sheetpile wall. Although not considered here, the final cover system could be extended out to the sheetpile, which could reduce the peak elevation of the landfill. In doing this however, a buffer of clean material for monitoring well installation adjacent to the sheetpile wall would not be provided and double-cased well technology would need to be incorporated.



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WILLOW BOULEVARD BERM SECTION - PRELIMINARY DESIGN
NOT TO SCALE

LEGEND:



EXISTING MATERIALS TO BE REMOVED
AND CONSOLIDATED BELOW LANDFILL
FINAL COVER SYSTEM

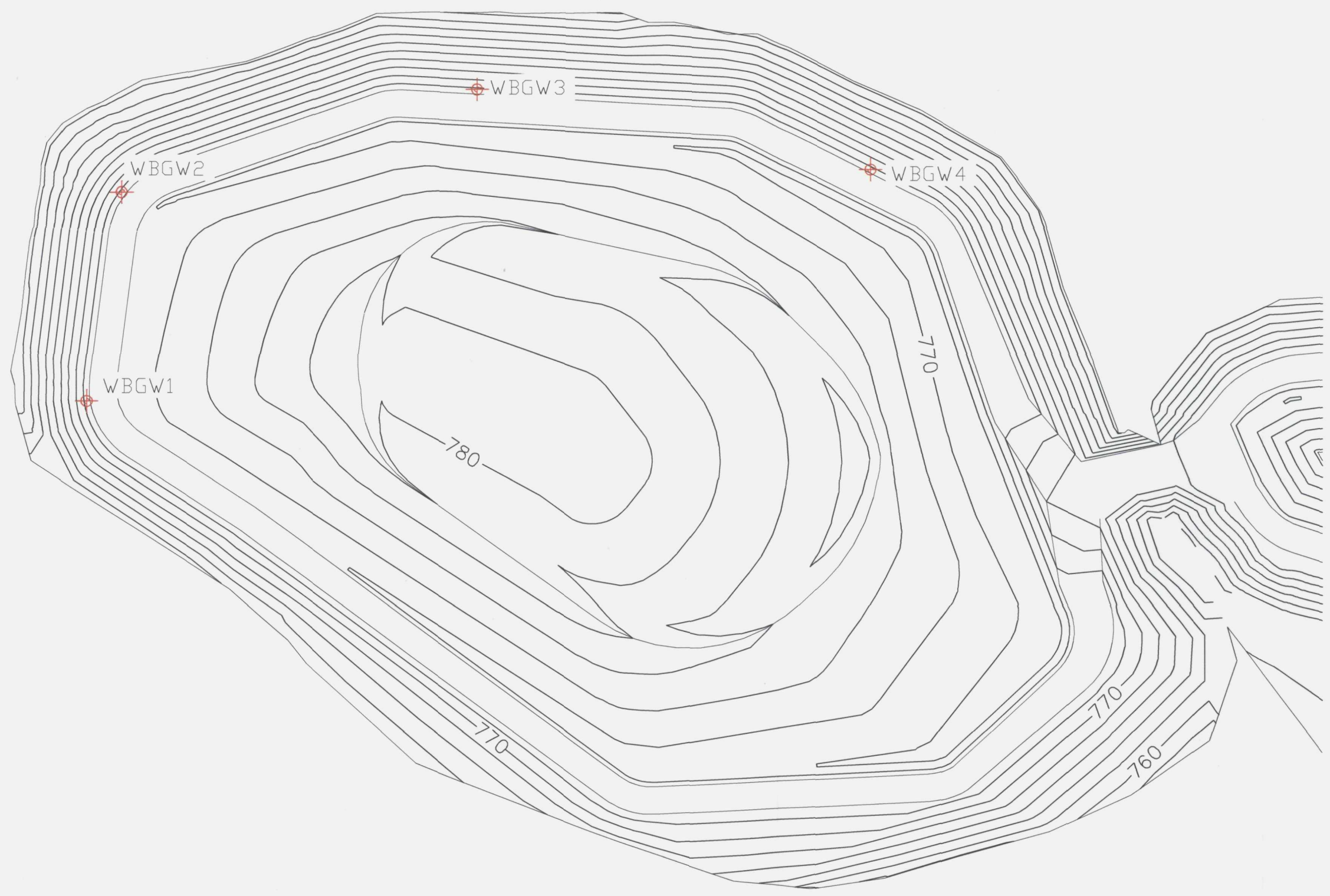
GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
WILLOW BOULEVARD/A-SITE LANDFILL OU

**BERM SECTION -
PRELIMINARY DESIGN**

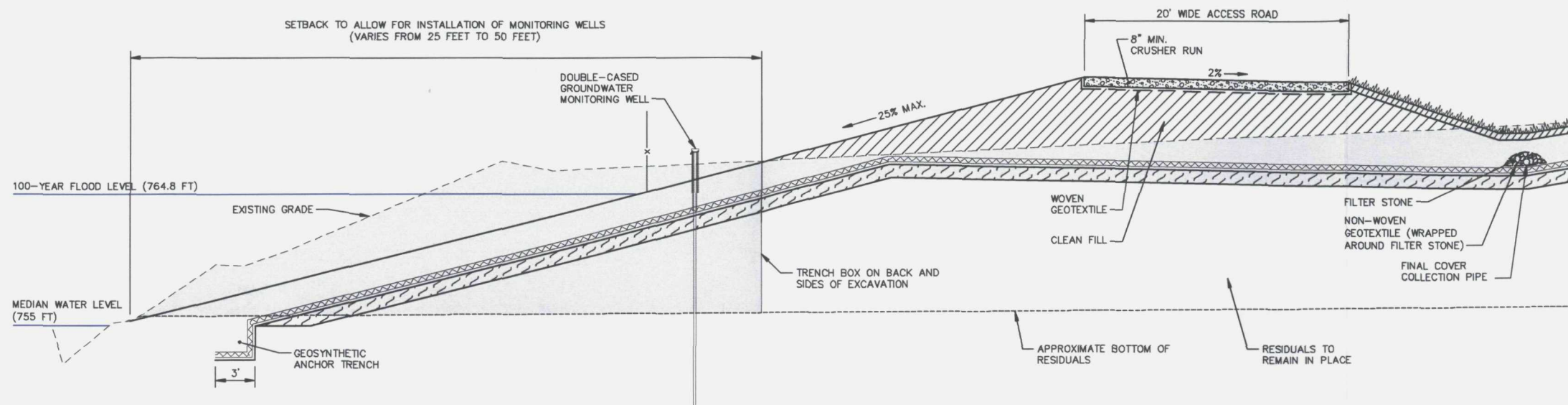


FIGURE
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GEORGIA-PACIFIC LLC ALLIED PAPER, INC./PORTAGE CREEK/ KALAMAZOO RIVER SUPERFUND SITE WILLOW BOULEVARD/A-SITE LANDFILL OU	
PLAN VIEW PRELIMINARY DESIGN	
	FIGURE 3



WILLOW BOULEVARD BERM SECTION - LOCALIZED EXCAVATION OPTION

NOT TO SCALE

LEGEND:



EXISTING MATERIALS TO BE REMOVED
AND CONSOLIDATED BELOW LANDFILL
FINAL COVER SYSTEM

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
WILLOW BOULEVARD/A-SITE LANDFILL OU

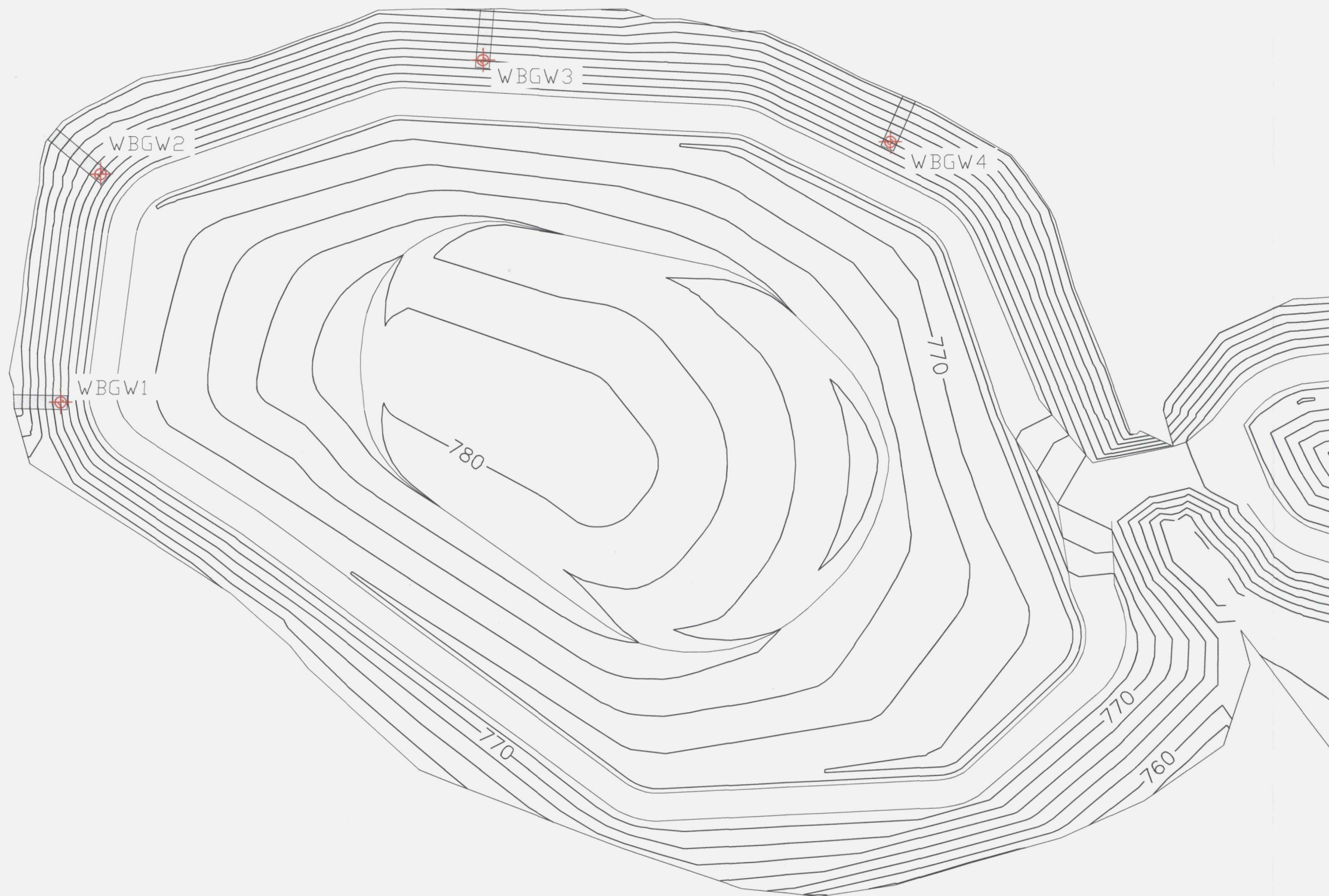
BERM SECTION - OPTION 1



FIGURE

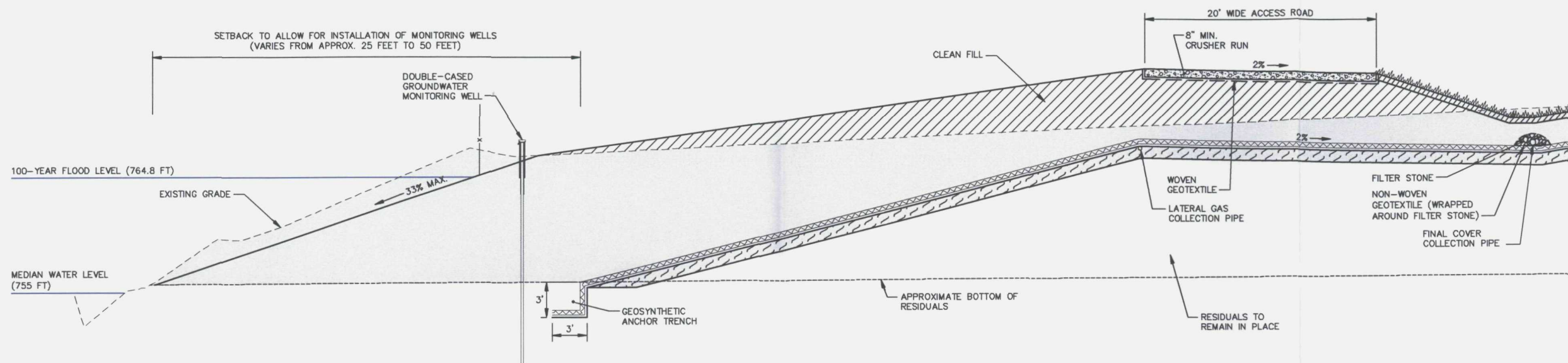
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PLOT: PLT: FULL CTB PLOTTED: 10/12/2010 1:29 PM BY: GONZALEZ, JAMES



GEORGIA-PACIFIC LLC ALLIED PAPER, INC./PORTAGE CREEK/ KALAMAZOO RIVER SUPERFUND SITE WILLOW BOULEVARD/A-SITE LANDFILL OU	
PLAN VIEW OPTION 1 - LOCALIZED EXCAVATION AROUND MONITORING WELLS	
	FIGURE 5

CITY: SYRACUSE DIV/GRUP: ENV/141 DB: B. GETTS L. FORAKER A. SAMIOS LD: A. SAMIOS PIC: B. DESHELDS PM: D. COWIN TM: P. MCGUIRE LVR: ON="OFF=REF" 10/12/2010 1:25 PM BY: GONZALEZ, JAMES
G:\ENV\CAD\MAHWAH\RETURN-TO-SYRACUSE\NY\B0064582\0001100030\2010-10\64581301.dwg LAYOUT: 6SAVED: 10/12/2010 1:25 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: PLT\FULL CTB PLOTTED: 10/12/2010 1:25 PM BY: GONZALEZ, JAMES



WILLOW BOULEVARD BERM SECTION - BANK SETBACK OPTION

NOT TO SCALE

LEGEND:



EXISTING MATERIALS TO BE REMOVED AND CONSOLIDATED BELOW LANDFILL FINAL COVER SYSTEM

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
WILLOW BOULEVARD/A-SITE LANDFILL OU

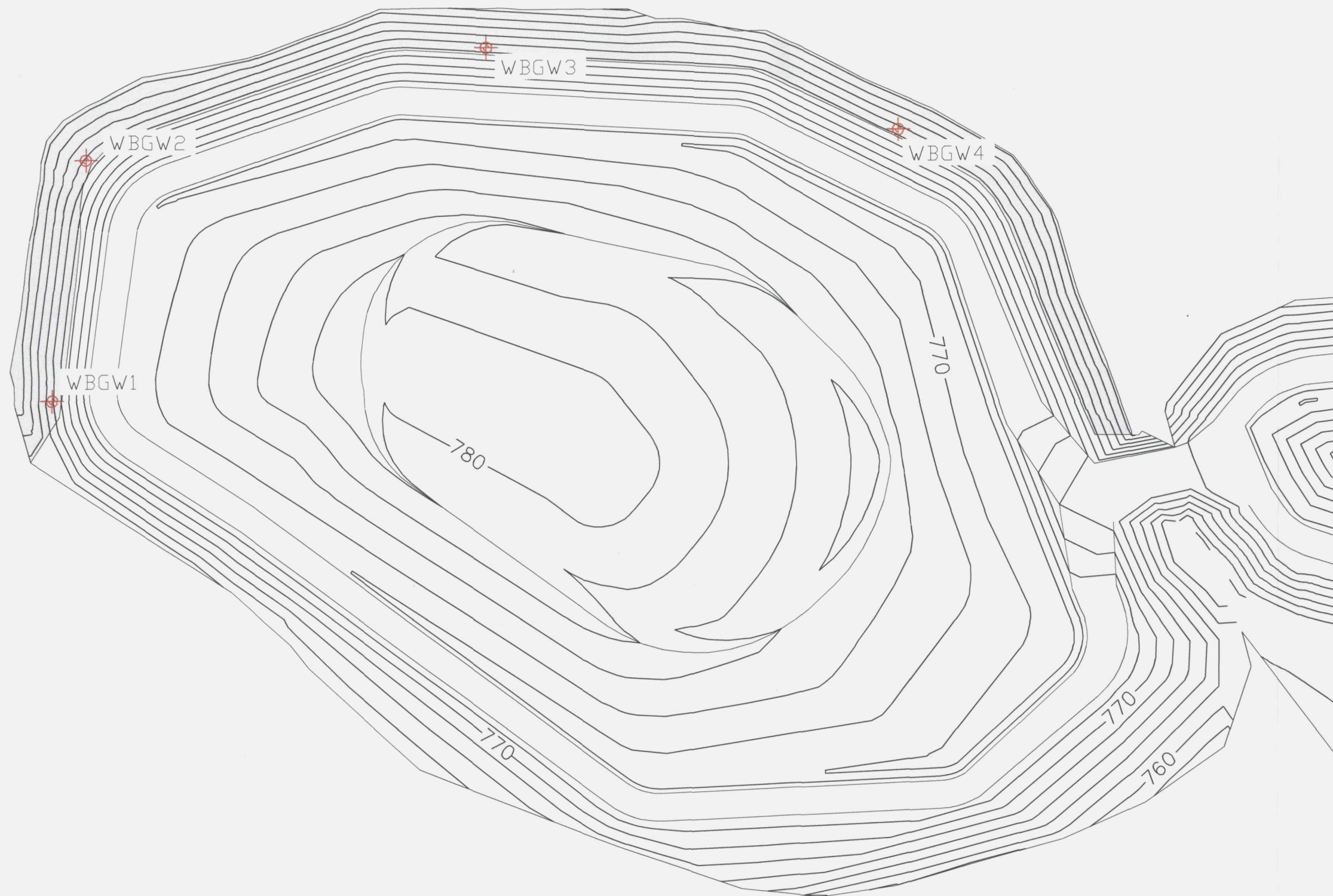
BERM SECTION - OPTION 2



FIGURE


6

CITY: SYRACUSE DIV/GRP: ENV/141 DB: B. GETTS L. FORAKER A. SAMIOS LD: A. SAMIOS PIC: B. DESHIELDS PM: D. COWIN TM: P. MCGUIRE LVR: ON=OFF=REF*
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LEGEND:
EXISTING MATERIALS TO BE REMOVED
AND CONSOLIDATED BELOW LANDFILL
FINAL COVER SYSTEM



GEORGIA-PACIFIC LLC ALLIED PAPER, INC./PORTAGE CREEK/ KALAMAZOO RIVER SUPERFUND SITE WILLOW BOULEVARD/A-SITE LANDFILL OU	
PLAN VIEW OPTION 2 - FULL BACK SETBACK	
	FIGURE 7